

# THE COSTS AND THE MANAGEMENT OF THE FIRM

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**Abstract:** The main purpose of this research is to present a way of organizing the managerial accounting, so that to allow the calculation of a pertinent cost per each cost center constituted in the entities from the industry of chemical fertilizers. We critically analyzed the current conception of organization of managerial accounting to an entity from the studied domain, in order to highlight the necessity of organize and implement a modern managerial accounting allowing the control of costs and the performances increase of the entities from this domain, starting from the premise that there are sufficient similarities between these entities. The research carried out highlighted the fact that, nowadays, the cost calculation is organized in the conditions of using some traditional methods and that is imposed the organization and implementation of a managerial accounting, based on the use of some modern methods, respectively the standard costs methods. The major implications of the system proposed for the researched domain consist in determining o pertinent cost orientated to the management of the entity, highlighting the shortcomings of traditional costs methods.

**JEL classification:** M41, M49.

**Key words:** standard method of cost, method per costs centers, fixed expenses, variable expenses, expenses budgets

## 1. INTRODUCTION

Taking some pertinent decisions and performances is preponderantly influenced by the quality of information supplied to the managers and by the promptitude with which they are transmitted.

Traditional methods of calculation currently used in the entities from the industry of chemical fertilizers, the overall method and the method on phases, have a lot of shortcomings, among which the historic character, the lake of efficiency and prevision.

Taking into account that the entities from the industry of chemical fertilizers activate nowadays on a concurrent market where the prices are established by the rapport between supply and demand, and the control over costs is one of the factors that may ensure the achievement of the proposed performance, it follows that it is absolutely necessary to introduce a control system of costs that aims to ensure the management process from the level of the entities in the analyzed domain with operative and pertinent economic information.

## 2. OBJECTIVES

From the perspective of optimizing costs in order to increase the performance of the entities from the industry of chemical fertilizers, our study aims to improve current costing

methodology by introducing an advanced calculation methods, more flexible and more effective for the management of the entity, taking into account the specific analyzed domain. Following the researches, we concluded that the best method for achieving the pursued objectives is the standard cost method, due to the multiple advantages it offers compared to the traditional methods currently used.

In principle, the evaluated methods of control through costs answer to the requirements of the modern control, but took in their individuality, they present some limits, reason for which we consider that the optimal organization of costs calculation, realizing the full valuation of the information needed for the leading of production processes and of orientating the activities of the entities, may be done only in the conditions of concomitant use of many methods et techniques integrated in a system, to take from them what is important and of benefit to the entity which applies it.

Starting from these reasons, practically, the proposed system combines the method of standard costs, from which it takes the technique and the instruments of costs budgeting and of tracking tools of deviations, with the method per costs centers, from which it takes the instruments of establishing the causes and responsibilities for the deviations found, and also with the method of managing by exception, in order to selectively inform the managers at different hierarchic levels. The system is based on the programming costs by standardizing direct costs and indirect costs budgeting, all under the use of automatic calculation technique.

### 3. METHODOLOGY

To carry out this study, we analyzed the current conception concerning the organization of managerial accounting for the entities from the industry of chemical fertilizers. The main methods of research used for performing the scientific demarche were of analyze and synthesis and also of qualitative research. The information about this subject were get by studying the specialized literature in our country and aboard, by analyzing the legislation in force afferent to this domain.

### 4. STANDARD CALCULATION PER COSTS CENTERS

The method of standard costs has the particularity that it allows to determine some predictable costs, considered as normal, which are used for the rapid evaluation of the obtained production. In relation to these costs we can operatively determine the variations of expenses during the development of the production process and therefore, the management by exception, the management control by analyzing the deviations compared with the preset costs, including by determining the cost of sub-activity, the separation of expenses according to their dependence on the volume of production, in fixed variable and mixed (semi variable) expenses, which allows to determine the rigidity degree of the company.

In this context, as we previously mentioned, we proposed that the research carried out to contribute to the improvement of the calculation methodology of costs in the entities from the industry of chemical fertilizers, by introducing the standard costs method, in standard variant of unique cost, per costs centers and products, but also by integrating here some elements of the normative method, as: a wider nomenclature of the calculation articles, the periodic calculation of the effective cost, for every finite or semi-finished product, the efforts being orientated to the preparation of a “exceptions model”, a priori considered as the highest reference point of the preoccupations to improve the tracking and the operative control over the expenses of production.

Under structural aspect, the standard costs method needs some works specifically for its application, in the following stages:

- developing standard calculations per cost centers and products;
- determining and analyzing the deviations from standard costs;
- following costs through accountancy.

The study carried out refers only partially to the first stage for applying the standard cost method, respectively the developing of standard calculations per costs centers, according to the nomenclature of production expenses per calculation articles.

Standard calculations per costs center shall be elaborated both for the productive centers and for the related cost centers, as we will present bellow.

#### 4.1. Developing standard calculations per productive costs centers

For the entities from the industry of chemical fertilizers, the productive costs centers are generally constituted on the main fabrication phases of the technological process. They gather many operations, in principle, taking place in a certain installation, well defined in space. On that centers, are registered, according to the nomenclature of calculation articles, all direct expenses, namely, those expenses which are identified on them<sup>1</sup>.

The development of standard calculations per productive costs centers constituted for the main or auxiliary sections of production, is made per calculation articles, for the simple expenses (raw materials, direct auxiliary materials, expenses of transport and supply, semi-finished products from the own production, technological utilities, recoverable and recyclable materials, direct amortizations, direct salaries, the entity's contributions to social insurances and unemployment funds afferent to direct salaries) and per types or articles of expenses, for complex expenses (expenses with the equipment maintenance and operation). All these articles of calculation have the feature of direct expenses compared with the constituted productive costs center. If the main section of production overlaps with the installation, as for example the urea department, than the expenses from the complex article of calculation, the "general expenses of the section" are also considered direct expenses compared with the constituted productive costs center and thus, the standard calculation will be elaborated for this article of calculation too.

For the development of standard calculations per productive costs centers constituted in the main sections of production, the calculation of standard expenses is made in a different way for the articles of calculation composed of simple expenses compared with the complex articles of calculation.

Thus, for the articles of calculation consisting in simple expenses, the development of standard expenses is generally made by multiplying the quantitative standard on the fabricated unit of product (standard specific consumption, standard work time etc.) with the unit values standard (standard unit price, standard unit cost, standard tariff of wages etc.) and with the standard quantity of production that will be fabricated in that productive costs center.

The issue at stake is, firstly, to determine the quantitative and value size of the considered standards.

To do this, a very detailed study of the production process will be performed to which both the technical compartment and the economic compartment participate, each of

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<sup>1</sup> Călin O., Man M., Nedelcu M.V. - Management Accounting, Didactic and Pedagogical R.A. Publishing House, Bucharest, 2008, page 224.

them having specific responsibilities in respect of: determining the quantitative standards – attribute of the technical compartment; determining the standards of values – attribute of the economic compartment.

Next, the calculation of standard expenses of the productive costs centers is made for each article of calculation consisting in simple expenses.

Thus, the determination of standard expenses at the article of calculation “*raw material*” for the productive center  $p$  ( $Chmp$ ), is based on the following elements of calculation: the standard quantity of products to be fabricated, the standard specific consumption and the standard unit price of supply.

Standard quantity  $Q_j$ , to be fabricated from the product  $j$ , to a certain productive costs center  $p$ , is determined so that to ensure the optimal use of the production capacity.

Standard specific consumption  $c_{ij}$ , from each type of raw material  $i$ , consumed for obtaining a unit of product  $j$ , at the productive costs center  $p$ , is determined starting from the formula of processing through which the dosage of raw material and the efficiency of processing are determined.

Standard unit price of supply  $p_i$ , for each type of consumed raw material, is determined taking into account either the price of the previously period, or a provisional price determined on the base of the economic circumstance. In the current period, we will take into account the prices of the period that is the closest from that for which the standard expenses are determined, so that the evaluation base to be as real as possible.

The relation of calculation is the following:

$$Chmp = \sum_{j=1}^n \sum_{i=1}^m (Q_j \times c_{ij} \times p_i)$$

As in the case of the article of calculation called “*raw material*”, we determine standard expenses for the articles of calculation: “*direct auxiliary materials*”, “*semi-finished products from the own production*” and “*technological utilities*”, with the difference that, in the case of the article of calculation “*semi-finished products from the own production*” and for the technological utilities, in order to evaluate the quantitative standards, instead of the standard unit price of supply we will take into account the standard unit price of their production, which is previously determined on the technological flux.

For the article of calculation “*expenses of transport and supply*”, in order to determine the standard expenses per the productive costs centers ( $Chtp$ ) we use as elements of calculation: the standard value of raw materials or of direct auxiliary materials, consumed per productive costs centers and the standard distribution coefficient of the expenses of transport and supply.

Standard value  $V_j$ , for each type of raw material (direct auxiliary material)  $j$  consumed to the productive costs center  $p$ , is determined as we previously shown.

The standard distribution coefficient of the expenses of transport and supply  $k_j$ , for each type of raw material (direct auxiliary material) consumed to the productive costs center  $p$ , is separately determined on the base of the budget of the expenses for transport and supply.

The relation of calculation is the following:

$$Chtp = \sum_{j=1}^n (V_j \times k_j)$$

Regarding the article of calculation called “*recoverable and recyclable materials*”, the determination of its standard level per the productive costs centers (Chmp), is performed by using as elements of calculation: the standard quantity to be recovered from the productive costs centers and the standard price of evaluation.

Determining the standard quantity  $c_j$  to be recovered from the material  $j$ , to the productive costs center  $p$ , is not a difficult operation, due to the fact that through the formula of processing, the quantities to be recovered are provided. For the entities from the industry of chemical fertilizers, in this article of calculation are included different technological utilities, as: condense, steam (condensing heat), that are recovered from an installation and are reused in other installations from the entities.

In order to evaluate the recoverable quantities we use the standard production cost of technological utility which is recovered or the standard value price of the secondary product that will be sold.

The relation of calculation is the following:

$$\text{Chmp} = \sum_{j=1}^n (V_j \times k_j), \text{ where:}$$

$p_j$  = standard cost of production (standard value price).

For the article of calculation called “*direct amortizations*”, determining standard expenses per a certain productive costs center  $p$ , Chap, is made using as elements of calculation: the input value  $V_j$ , for each type of fixed means  $j$ , used at that productive costs center, taken from the legislation in force.

The relation of calculation is the following:

$$\text{Chap} = \sum_{j=1}^n V_j \times k_j$$

If in a productive costs center are obtained two or more finished products (semi-finished products), in order to simplify the calculations for determining standard cost per each finished product (semi-finished product), the expenses with the amortization of the installations are included at the complex article of calculation called “*expenses with the equipment maintenance and operation*”.

Regarding the article of calculation “*direct salaries*”, for the calculation of standard expenses per the productive costs centers (Chsp), the elements of calculation are: standard work time, expressed in hours and the standard tariff of salary per hour.

Standard work time  $t_{ij}$ , for the employees of the productive costs center  $p$ , is determined on the base of the tariff indicators of qualification, according to each job  $i$  and here, per each type of qualification  $j$  and taking into account the normal regime of work.

Standard tariff of salary  $T_{ij}$ , is determined on the base of the employees’ standard qualification, of data concerning the salaries paid in the previous periods and of work and life conditions from the next period, also taking into account the work legislation.

The relation of calculation is the following:

$$\text{Chsp} = \sum_{i=1}^n \sum_{j=1}^m (t_{ij} \times T_{ij})$$

For the article of calculation called “*the entity’s contributions to social insurances and unemployment funds afferent to direct salaries*”, determining standard expenses per the productive costs center p, Chcp, is made using as elements of calculation: the expenses with the standard direct salaries at the level of that productive costs center, Chsp, previously determined and the amount of the coefficients concerning the entity’s contribution to the state social insurances, to the social and health insurances and to the unemployment fund,  $k_{ap}$ , coefficients determined through the normative documents in force.

The relation of calculation is:

$$Chcp = Chsp \times k_{ap}$$

The determination of the standard level of expenses for the article of calculation “*expenses with the equipment maintenance and operation*”, arises some particularities taking into account their feature of complex expenses, although compared with the productive costs center, they also have the feature of direct expenses.

The complex feature of these expenses is given by the fact that in their structure there are many elements of simple expenses whose nature and economic destination is different. In the case of the entities from the industry of chemical fertilizers, the content of this article of calculation is more restraint than in others industrial branches, due to the fact that some articles of calculation appear as distinct articles of calculation.

In the conception of the standard cost method, the expenses with the equipment maintenance and operation are included at the article of calculation called “*overhead expenses*”, together with the general expenses of the section, the general expenses of administration and the selling expenses, and the determination of their standard level is made per elements of expenses, according to their economic nature, but taking into account their different behavior compared with the production volume, namely the grouping in fixed and variable expenses.

The starting point<sup>2</sup> in determining the standard level of expenses for the article of calculation called “*expenses with the equipment maintenance and operation*”, is the determination of the production to be obtained, expressed in physical units of production, and also of the work units, generally, the standard time necessary to realize the production or the working time of the machines and equipments. In certain situations, we can also practice the expression of the production in value units, as is the case of the non-homogenous activities.

The final point is to determine the budgets of expenses per installations, for the principal and auxiliary activity of the entity.

To determine the standard level of expenses with the equipment maintenance and operation we can use two methods: the overall method and the analytic method. We consider that, for the entities from the industry of chemical fertilizers we should use the analytic method, because this method leads to determine some expenses as real as possible and in consequence, of a cost as accurately as possible.

The calculation of expenses with the equipments maintenance and operation per installations in their quality of costs centers, gives the possibility to determine the cost per

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<sup>2</sup> Iacob C., Ionescu I., Goagă D. - Management accounting in line with international practice, Universitaria Publishing House, Craiova, 2007., page 160.

the work hour for different installations or equipments, respectively a more just distribution of those expenses per the product unit made in that costs center.

Further, it exemplifies the determination of the standard level of the expenses with the equipments maintenance and operation, for an entity from the industry of chemical fertilizers, to the installation of ammonium nitrate/nitrocalcar, through the analytic method, also called the method of individual standards.

The calculation base is constituted by the data from the previous year, and the standard production expressed in hours (670 hours every month), is different from the production of the previous year (625 hours every month). The percentage rate corresponding to the stimulation factor is of 1.5 %.

Taking into account these data we will proceed as follows:

1. For fixed expenses, due to their relatively constant feature compared with the changes of production volume, we will adopt as standards their level from the previous year (table 1).
2. For variable expenses we will proceed as follows:
  - a) it determines the unit rate of expenses according to the following relation<sup>3</sup>:

$$cvu = CV/Q, \text{ where:}$$

cvu = the unit variable expense from the previous year;

CV = total variable expenses from the previous year;

Q = the volume of production from the previous year.

**Table no. 1 THE BUDGET  
of the expenses with the equipment maintenance and operation**

Code / Name of the section: 40 000 / Ammonium nitrate

Code / Name of installation: 40 100 / Ammonium nitrate / nitrocalcar

thousand lei

Code of the expenses article	Name of expenses	Monthly expenses in the previous year	Monthly standard expenses	Annual standard expenses
	The volume of the activity (in hours)	562	670	8 040
	1. Fixed expenses			
1004	Amortization of equipments and means of transport from the section	9 926	9 926	119 112
	Total fixed expenses	9 926	9 926	119 112
	2. Variable expenses			
1001	Expenses with the maintenance and current reparations in the section	49 134	51 881	622 576
1002	Expenses with the RK at the equipments and means of transport in the section	26 134	27 595	331 142
1005	Reparation and SDV maintenance with special destination	10	11	127
1006	Energy and fuel with technological purpose	5 286	5 582	66 982
	Total variable expenses	80 564	85 069	1 020 827
<b>1000</b>	<b>Total expenses</b>	<b>90 490</b>	<b>94 995</b>	<b>1 139 939</b>

<sup>3</sup> Călin O., Man M., Nedelcu M.V. - Op. cit., page 197.

	Standard hourly cost - lei		141 784	141 784
	- Variable - lei/hour		126 969	126 969
	- fixed - lei/hour		14 815	14 815

Source: Processing author based on company data

For:

- current reparations and the equipment maintenance:  
 $cvu = 49.134.000/625 = 78.614$  lei/hour
  - capital reparations of the equipments:  
 $cvu = 26.134.000/625 = 41.814$  lei/hour
  - the reparation and maintenance of SDV with special destination:  
 $cvu = 10.000/625 = 16$  lei/hour
  - energy and fuel in technological purpose:  
 $cvu = 5.286.000/625 = 8.458$  lei/hour
- b) it determines the variable expense correlated with the standard production according to the following relation<sup>4</sup>:
- $$CV_c = Q_s \times cvu, \text{ where:}$$
- $CV_c$  = total variable expenses correlated with the volume of production;  
 $Q_s$  = standard volume of production;  
 $cvu$  = the unit variable expense from the previous year.

For:

- current reparations and the equipment maintenance:  
 $CV_c = 670 \times 78.614 = 52.671.380$  lei
  - capital reparations of the equipments:  
 $CV_c = 670 \times 41.814 = 28.015.380$  lei
  - the reparation and maintenance of SDV with special destination:  
 $CV_c = 670 \times 16 = 10.720$  lei
  - energy and fuel in technological purpose:  
 $CV_c = 670 \times 8.458 = 5.666.860$  lei
- c) it determines the standard variable expense according to the following relation<sup>5</sup>:
- $$CV_s = CV_c - CV_c \times Fs/100, \text{ where:}$$
- $CV_s$  = standard total variable expenses;  
 $F_s$  = the stimulation factor.

For:

- current reparations and the equipment maintenance:  
 $CV_s = 52.671.380 - 52.671.381 \times 1,5/100 = 51\ 881\ 309$  lei
- capital reparations of the equipments:  
 $CV_s = 28.015.380 - 28.015.380 \times 1,5/100 = 27.595.149$  lei
- the reparation and maintenance of SDV with special destination:  
 $CV_s = 10.720 - 10.720 \times 1,5/100 = 10.559$  lei
- energy and fuel in technological purpose:  
 $CV_s = 5.666.860 - 5.666.860 \times 1,5/100 = 5.581.857$  lei

<sup>4</sup> Călin O., Man M., Nedelcu M.V. - Op. cit., page 197.

<sup>5</sup> Călin O., Man M., Nedelcu M.V. - Op. cit., page 198.



The synthesis of determining the standards for the expenses with the equipments maintenance and operation is realized by completing the budget of expenses (table 1), that constitutes an important tool of controlling these expenses per installations.

Starting from the calculation of standard expenses per each article of calculation according to the presented methodology, it elaborates budgets of expenses per the installations from the main sections of production, constituted as productive costs centers.

#### 4.2. Elaborating standard calculations per the related costs centers

Regarding the indirect expenses, which generally consist in the indirect expenses of production, the general expenses of administration and the expenses of selling, for their registration, to the entities from the industry of chemical fertilizers, it is constituted a related costs center at the level of each section and respectively for the entity. From here, after they were collected on the related center, with the calculation of the cost per product, they are distributed on the productive costs centers.

Elaborating standard calculation for the related costs centers from the level of the production sections, whether it is about the principal or auxiliary sections, should be done per articles of expenses stipulated in the article of calculation called "*general expenses of the section*"<sup>6</sup>, but taking into account their behavior different from the volume of production, namely the grouping in fixed expenses and variable expenses.

Standard calculation for related costs centers of the production sections generally present the same particularities that were shown at the standardization of production expenses from the article of calculation called "*expenses with the equipment maintenance and operation*". In addition, besides the fact that they are complex and direct expenses compared with the related costs center, they are also indirect compared with the productive costs centers.

It follows that the calculation of standard expenses of related costs centers that are constituted at the level of the production sections may be done using the analytic method presented at the standardization of the expenses with the equipments maintenance and operation.

Regarding the elaboration of standard calculations for the related costs centers corresponding to the administrative sector and to the selling sector, they are effectuated according the same methodology used to elaborate the standard calculations for the related costs centers constituted at the level of the production sections. The distinction consists in the fact that instead of the expenses elements comported by the article of calculation "*general expenses of the section*", it uses expenses elements included in the article of calculation called "*selling expenses*"<sup>7</sup>. We also must take into account the fact that, in the case of the article of calculation called "*general expenses of administration*" all the expenses elements are considered fixed expenses.

### 5. CONCLUSIONS

The value added to the work consists in performing a rigorous study of the informational study of costs in a very important sector for the industry and agriculture in Romania.

By implementing the calculation of costs in the proposed variant it will realize: the determination of some estimating costs, considered as normal, which are used for the rapid

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<sup>6</sup> Călin O., Man M., Nedelcu M.V. - Op. cit., page 227.

<sup>7</sup> Ibidem.

evaluation of the obtained production and in relation to which we can operatively determine the variations of the expenses during the development of the production process and so, the management by exception, the management control by analyzing the deviations compared with the preset costs, including by determining the cost of the sub-activity, the separation of expenses according to their dependence on the volume of production, in fixed variable and mixed (semi variable) expenses, which allows to determine the rigidity degree of the company.

In conditions of economic stability, the standard unit cost may be considered as the only calculation of unit cost of finished products (semi-manufactured goods), thus eliminating all the works after calculation typical for absorbent methods. In this view, the weigh centre of the current work is moving in the sphere of the as detailed tracking of expenses on article of calculation and costs centres, leaving aside the finished product (semi-manufactured goods) which gave them occasion. If in certain periods, it is wished to finalize the effective calculation and the calculation on the unity of finished product (semi-manufactured goods), this is realized starting with the calculation on costs centres which don't remove the cost calculation on product. It follows therefore that the standard-cost method gives a new orientation to the evidence of production expenses and to the work of analysing the production costs, namely: the works of post-calculus and also the work of analysis with retrospective character pass on secondary plan.

Because the method of calculation per costs centers is also based on the existence of some responsibility at the level of each costs centers and each of them administrates a budget of expenses, we can say that every costs center becomes a responsibility center. Thus, it creates conditions of optimal informing of decisional factors from the entities of chemical fertilizers but also for the exercise of the management control inside the entity.

## REFERENCES

1. Bouquin Henri Management Accounting, Translation by Tabără Neculai, TipoMoldova Publishing House, Iași, 2004.
2. Călin O., Man Management Accounting, Didactic and Pedagogical R.A. Publishing M., Nedelcu M. House, Bucharest, 2008.
3. Iacob C., Management accounting in line with international practice, Ionescu I., Universitaria Publishing House, Craiova, 2007. Goagără D.
4. \* \* \* Order OMFP no. 1826/2003 which approved the Mentions on some measures related to the organization and performance of management accounting, Official Gazette of Romania no. 23/2004.
5. \* \* \* New accounting provisions, according to the European directives approved by Order OMFP 3055/2009, with the subsequent amendments, Official Gazette of Romania no. 882/29.12.2010.